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Conference Abstract

A New Platform to Build and Support Citizen Science Projects in Biodiversity

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Abstract

Citizen science (CS) refers to the active participation of non-professional scientists in scientific research, where they contribute to data collection, analysis, and problem-solving (e.g. Jansen et al. (2024)). It has gained traction in recent years as a means to democratise science and enhance large-scale environmental monitoring, particularly in biodiversity and ecosystem research (Danielsen et al. 2024). The widespread use of mobile phones, together with built-in geolocation features, has facilitated the development and use of mobile applications for CS (Hognogi et al. 2023). However, their development and use require substantial effort, including the need for IT expertise to develop and maintain the app, the infrastructural costs associated with data collection and management, private information security, and the increasing demand for generating Findable, Accessible, Interoperable and Reusable data (Wilkinson et al. 2016). In this context, LifeWatch Italy (Tarallo et al. 2025) has developed a CS Platform*[1], a comprehensive online resource designed to support every stage of a CS project, from project development to data collection and management. The CS Platform could help overcome the current fragmentation of CS initiatives in Italy by providing a unified framework for managing and sharing information, enhancing understanding of key

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environmental issues such as biodiversity loss and the spread of alien species. It offers various functionalities (Fig. 1):

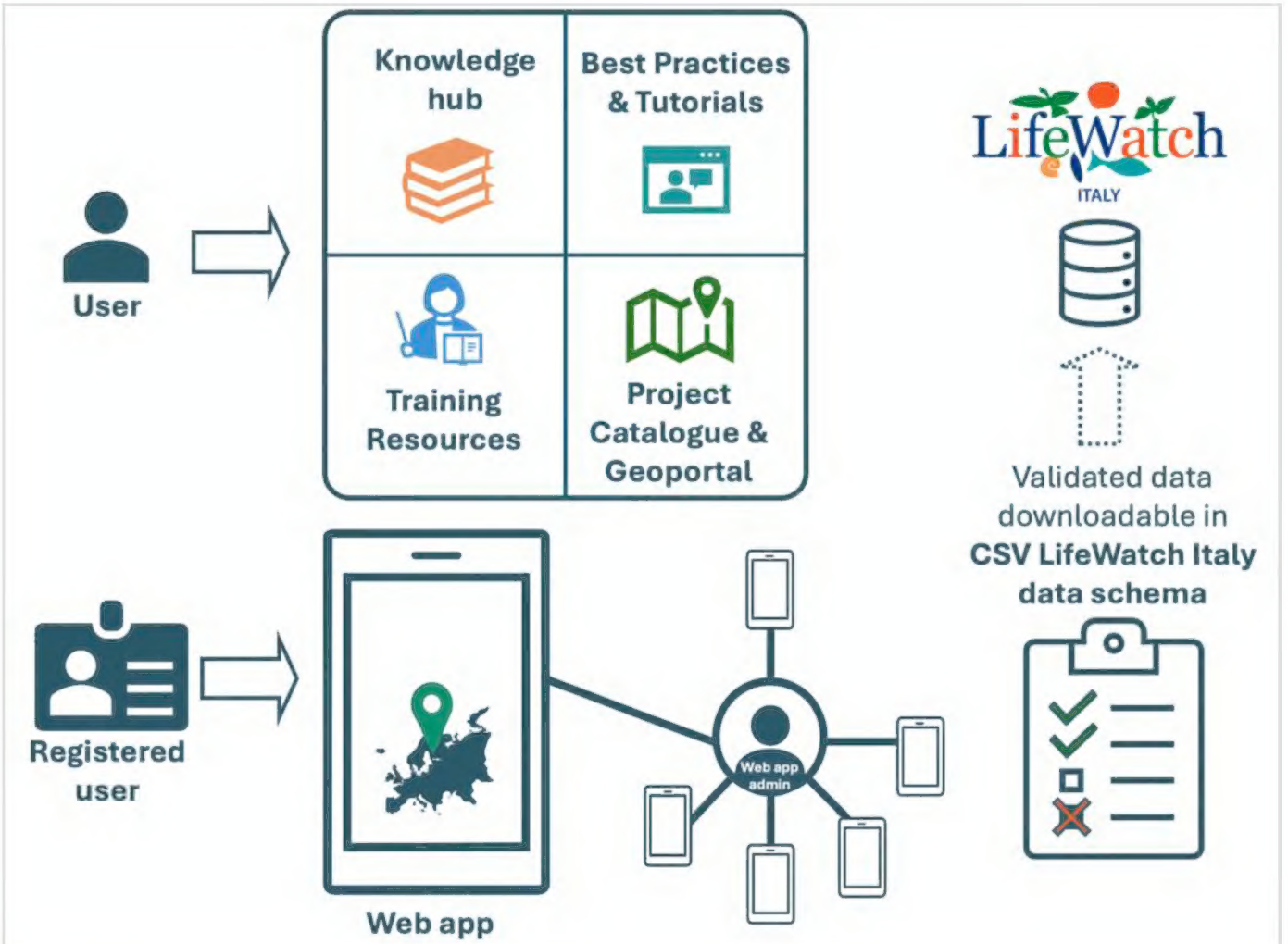

Figure 1.

Overview of the Citizen Science Platform. The platform provides users with access to a knowledge hub, best practices, tutorials, training resources, and a project catalogue integrated with a geoportal. Registered users can build project-customised web applications to collect observations from citizen scientists, which are then validated and managed by project administrators. Validated data can be exported in CSV format compliant with LifeWatch Italy's data infrastructure and other international initiatives. The figure belongs to the authors, Tarallo, Basset & Cozzoli et al. CC BY 4.0

- A **knowledge hub** dedicated to fundamental knowledge about CS, including its history, methodologies, and key principles. Users can access explanatory texts with bibliographic references and a curated collection of scientific publications searchable via filters.
- **Best practices and tutorials** for developing and managing CS projects. This section leads users through the essential steps of project formulation, community engagement, data management, and communication. Each step includes case studies, external resources, and video tutorials.
- A searchable repository of **training materials** to help users develop skills in CS methodologies and project management.

- A **catalogue** of CS projects, visualised on an interactive map. Users can filter projects by topic, age group, language, country, organisation, and project status. Registered users can contribute by adding new or existing projects.
- A **toolkit** allowing users to create mini-websites to showcase and disseminate information and results from their participatory projects, as well as web applications for data collection by citizens in a customisable manner for free. The user who creates a new project on the platform becomes the project administrator of their own website and web application. The project administrator can set up a customised observation-based data collection system tailored to their specific research needs, such as the collection of audio files, pictures, numerical data, etc., along with a customisable list of metadata. Project administrators can access and validate all the user-submitted data and generate analytical reports directly from the web app. The data are downloadable in CSV format compatible with the LifeWatch Italy Data Portal. Fields are described using controlled terminologies such as Darwin Core so that the data are also compatible with international initiatives (e.g., the Global Biodiversity Information Facility).

Although the CS Platform has been released relatively recently and is fully operational, it has not yet been widely adopted. Dissemination activities are planned to encourage broader adoption. The objective is not to compete with well-established platforms, but rather to promote the use of the CS Platform in order to support a more uniform and coordinated approach to citizen-generated biodiversity data in the Italian context. This vision is supported by the platform's integration within the wider LifeWatch Italy ecosystem (Tarallo et al. 2025). Its practical impact has been demonstrated through its use in national projects, such as the Hic Sunt Lupi, which monitors the wolf populations in the Apulia region (Italy). Under this framework, a dedicated web app is currently supporting a CS initiative to record wolf observations. Users can upload a photo to confirm the sighting. The system automatically records geographic coordinates, prompting the observer to confirm or modify them. Optional additional metadata can also be provided, such as whether human interactions occurred, the number of wolves observed, and the presumed life stage.

Future developments will focus on building a direct integration of (meta)data flows to the LifeWatch Italy Data Portal and Metadata Catalogue.

Keywords

public engagement, mobile applications, ecology

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Conflicts of interest

The authors have declared that no competing interests exist.

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Endnotes

*1 http://www.citizenscience.lifewatchitaly.eu. Accessed on: 2025-11-19.